EUROPEAN PATENT APPLICATION

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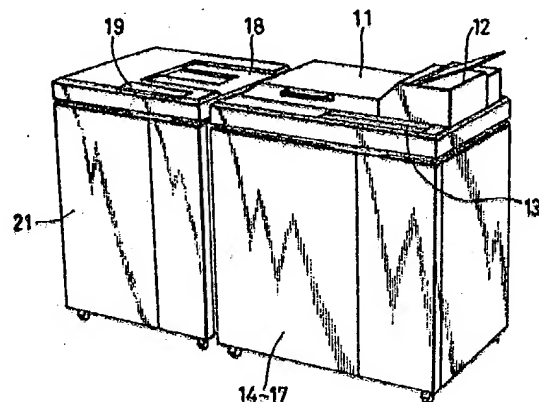
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(54) A document issuing apparatus.

(57) A document issuing apparatus is described for use in a department store. The apparatus includes an optical reader (11), an operation panel (13), a digital printer (21), and a computer mechanism which includes a data reading section (14), a data storage section (15), a data recognizing section (16), and a control section (17). The apparatus prints control slips from transaction control data provided on an order form. To do this, a set of blank control slips is read, binary coded and stored in storage section (15) as format data for subsequent use. Then, order forms containing transaction control data including classification data are read. The control data is arranged in accordance with the classification data and organized into a format compatible with the format of the control slips. The control slips are then printed using the format data and the control data. The control slips are printed in order determined by the classification data.

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"A DOCUMENT ISSUING APPARATUS"

This invention relates to an apparatus which produces
sets of control slips containing commercial transaction
information.

Department stores undertake commercial transactions in
which a customer requests that one or more gifts
purchased by that customer be delivered to various
recipients. The department store prepares, as a result
of transaction information provided by that customer, a
written order form bearing transaction control
information such as the customer's name, the names and
addresses of the recipients of the gifts and a
description of the gifts. The department store then
uses this transaction control information on the order
form to prepare a set of transaction control slips also
referred to as delivery slips. Each set of transaction
control slips is used by the department store in order
to locate the gift selected by the customer, wrap the
gift, deliver the gift to a delivery station, deliver
the gift from the delivery station to the ultimate
destination, and receive a signed receipt from the
ultimate recipient. The signed receipt is returned to
the department store to complete billing and record
keeping procedures.

Accordingly, a single set of transaction control slips
is required for each gift. A set of such transaction
control slips commonly includes the following
individual slips:

(1)   work slip which is used in a delivery department
        of the store where items ordered for delivery
        are taken and wrapped for delivery. The work
        slip may also serve to clear accounts.

(2)   A tap slip which is used as a label attached to the ordered item to be delivered;

(3)   A takeout slip which is used at the delivery station of the department store for despatch; and

(4)   A verification slip which is used as a receipt and upon which the signature of the recipient is written to certify the delivery of the ordered item to the intended destination.

Information from the original order form for the gifts, such as the name and address of the customer, the name and address of each person to receive an ordered item or gift, the type of item or gift to be received, the number of ordered items or gifts, are entered as common transaction control information on each slip of a set of transaction control slips for each gift. However, each slip of a set of transaction control slips may be different in form and may require different portions of the transaction control information. Moreover, the various slips making up each set of transaction control slips for each gift are forwarded, as one set of slips, to the gift storage, gift wrapping or similar department responsible for filing the customer's request and to all subsequent locations within the department store organization which are necessary to complete delivery of the gift. Accordingly, it is essential that the individual slips of each set of transaction control slips be arranged in the proper order so that each slip can be removed as various steps in the delivery process are completed.

In the case of a small order, usually the customer enters transaction control information directly on the individual slips of a set of transaction control slips.

Each department of a department store may have a
booklet which has blanks of each of the various slips
which make up a set of transaction control slips, so
that one such set may be prepared by entering
predetermined data on the top slip with carbon sheets
inserted therebetween. Of course, when the transaction
control slips are made up of pressure sensitive paper,
the insertion of carbon sheets is unnecessary.

On the other hand, in the case of a large order, for
example in the case where commodities are delivered to
more than ten destinations, usually the department
store prepares the required sets of transaction control
slips according to transaction control information
submitted by the customer on a prepared order form.

During a rush period, such as a holiday season in which
a department store is required to delivery a large
number of gifts, the department store may issue sets of
transaction control slips according to: (1) a spirit
system, (2) a copy system (or an overlay system), and
(3) a handwritten system. According to these systems, a
set of delivery slips is prepared by transferring or
copying necessary data onto preprinted sets of
transaction control slips from the completed order form.

For example, using the spirit system, an order form
prepared by the customer is chemically treated and the
slips of a set of transaction control slips are printed
by a chemical base printer. However, each of the slips
of a set of transaction control slips must be
independently printed and it is, accordingly,
impossible with such a system to print a set of
transaction control slips in one action. In addition,
it is necessary that the blank sets of transaction
control slips be preprinted.

In the copy system, an overlay is prepared for each customer bearing certain transaction control information. This overlay is used to prepare the various slips of a set of transaction control slips. However, it is necessary to have the same number of overlays as the number of different forms of slips making up a set of transaction control slips. The formation and maintenance of these overlays and the copying operation have proved troublesome.

In the handwritten system, necessary transaction control data is entered into a preprinted set of transaction control slips using pressure sensitive paper by referring to the written order originally prepared by the customer. In this case, it is difficult to enter the necessary data correctly at all times, and the work efficiency is extremely low.

Since a busy department store prepares a large number of different sets of transaction control slips to fulfill many gift orders, the slips of each set often become mixed up and out of order or incorrectly issued in duplicate. Accordingly, much time and labour must be devoted to checking the transaction control slips of each set, causing the conventional procedures to be uneconomical and inefficient.

Moreover, in any of the above described systems, it is necessary to sort out the prepared sets of transaction control slips according to the kinds of commodities to be delivered, or according to the locations to which these commodities are to be delivered. This sorting operation is uneconomical and low in efficiency, requiring a lot of time and labour.

Accordingly, an object of the subject invention is to provide a document issuing apparatus in which transaction control information provided in a written order is automatically transferred to sets of transaction control slips, and these sets of transaction control slips are automatically sorted in a predetermined order depending upon the submitted transaction control information.

According to this invention, there is provided a document issuing apparatus for printing transaction control information, presented on an order form for each of a plurality of transactions, onto individual sets of transaction control slips, said apparatus comprising:

(a)   optical means for reading from the order forms transaction control data representing transaction control information for a plurality of transactions, said transaction control data including classification data;

(b)   storage means for storing said transaction control data and for also storing format data representing the format of said control slips making up a set of transaction control slips;

(c)   processing means for ordering said control data for said plurality of transactions in response to said classification data contained in said transaction control information for each transaction, and for organizing said transaction control data for each transaction into a format compatible with the format of said control slips; and

(d)   printing means for simultaneously printing both said transaction control information data and said format data to form a set of said transaction control slips for each transaction, said set of transaction control slips being printed in an order determined by said classification data for each transaction.

This invention will be described by way of example with reference to the drawings in which:

Figure 1 is an external view of a document issuing apparatus according to the teachings of the present invention;

Figure 2 is a block diagram showing the essential components of the subject invention;

Figure 3 is a plain view of a sheet on which blank control slips of a set of transaction control slips have been printed;

Figure 4 is a plain view showing an example of an order form;

Figure 5 is an explanatory diagram showing the image of the order form of Figure 4 with the contents of which being arranged in accordance with the teachings of the subject invention;

Figure 6 is an explanatory diagram showing the image of a set of transaction control slips which have been composed in accordance with the teachings of the present invention;

Figure 7 is a block diagram showing the essential components of a second embodiment of a document issuing apparatus incorporated the teachings of the present invention.

Figure 1 shows an external view of a first example of a document issuing apparatus according to the subject invention. The apparatus consist of two devices, namely a document reader and a document printer physically connected together. More specifically, an optical reader 11 is provided for reading data contained on documents presented to reader 11. An automatic feeder mechanism is provided for sequentially feeding such documents to optical reader 11. An operating panel 13 is installed to provide operator input information.

A computer mechanism is employed in connection with
optical reader 11 which includes a data reading section
14, a data storage section 15, a data recognizing
section 16, and a control section 17, all of which are
described in more detail below in connection with
Figure 2. Control section 17 basically provides control
over sections 14-16. Sections 14-17 may for example
comprise a microprocessor unit.

An original document discharging tray 18 is installed
on the top left-hand side of the device as shown in
Figure 1 and a digital printer or printing means 21 is
provided inside the left-hand device. A document or
slip which has been printed is discharged into a
discharging tray (not shown) through a discharging
opening formed on the left side wall of the left-hand
device.

The steps of forming a set of transaction control slips
will now be described. First, an operator inputs a set
of blank transaction control slips into the apparatus
of Figure 1 using the optical reader 11 and feeding
mechanism 12. Figure 3 shows one example of a blank set
of transaction control slips 23. Set 23 includes
individual blank transaction control slip forms;
namely, work slips form 24, tag slip form 25 (to be
attached to the commodity), takeout slip form 26, and
verification slip form 27. The operator then places the
blank set of transaction control slips 23 on optical
reader 11 of the device Figure 1 and presses a form
inputting start button (not shown) on operating panel
13. When inputting different formats of control slips
making up a set of transaction control slips, form
identifying codes are also inputted by the operator
using appropriate control indicators on operating panel
13.

When the form inputting start button is depressed,
control section 17 (Figure 2) causes reading section 14
to start a reading operation. That is, a should be
understood to those skilled in the art, a fluorescent
lamp or the like (not shown) is included in optical
reader 11 and turned on to scan the document on which
the blank set of transaction control slips 23 is
printed. The optical image of set 23 is converted into
electrical signals by an image sensor with the aid of a
typical optical system which is also well-known to
those skilled in the art. The electricalsignal is
binary-coded into a digital signal. This digital signal
is transferred to memory section 15 under the control
of control section 17. Accordingly, format data
representing the formal of the control slips making up
a set of transaction control slips 23 is
semi-permanently stored in memory section 15.
Specifically, this format data may be stored in Form
Storing Region 29 of memory section 15.

Memory section 15 may, for example, comprise a magnetic
disc or optical disc. The format data stored in Form
Storing Section 29 is read every time a set of
transaction control slips is to be printed by the
apparatus. That is, it is unnecessary to input the
format data with each succeeding set of transaction
control slips issued, except when the format of such
control slips has been changed or a different set of
transaction control slips is to be employed. If a second
form of transaction control slips is to be employed and
format data representing this new form of control slips
had previously been inputted into Form Storing Region
29, instead of re-inputting such format data, the
operator may simply indicate which of the different
sets of transaction control slips are to be issued
using an appropriate indicator on operating panel 13.

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Once the appropriate data has been stored in Form
Storing Region 29, the operator then inputs transaction
control information using an order form. Specifically,
a gift purchasing order form 31 as shown in Figure 4
may be used. Order form 31 has ten lines each including
the names and addresses of persons to whom a gift is to
be delivered, and the nomenclature, unit price and code
for each such gift.For simplification and illustration,
in Figure 4 the names of persons to whom gifts are
delivered are represented by symbols ① through ⑩. The
address and name of a customer who requests the
department store to deliver those gifts is entered in
the lower portion of order from 31.

The operator sets gift purchasing order form 31 on
optical reader 11 or, if more than one order form is
employed, the operator employs automatic feeder 12. The
operator then specifies: (i) the type of set of trans-
action control slips to be issued for each gift, and
(ii) the sorting method to be employed. This information
is inputted through use of the operation panel 13. The
operator then depresses a print start button on operator
panel 13 (not shown). Thereupon, the gift purchasing
order form 31 is fed to optical reader 11, and its image
is read as is well known to those skilled in the art.
The resultant electrical signal is binary-coded into a
digital signal which is transferred to the memory
section 15 (Figure 2) under the control of control
section 17. Transaction control information on form 31
(namely, destination information, gift information and
purchaser informatioNO is stored in a Not Processed Data
Storing Region 13 of memory section 15. In the case
where a plurality of gift purchasing order forms 31 are
set on the automatic feed mechanism 12, the images of
these order forms are read sequentially one after
another and stored in region 33 of memory section 15.

After all of the order forms to be processed have been read, the document issuing apparatus of the subject invention carries out electrical editing of the transaction control information stored in Not Processed Data Storing Region 33. This editing is accomplished in accordance with classification data contained in the stored transaction control information. Such classification data may, for example, comprise the gift's name and gift's code data when sorting is to be accomplished on a commodity classification basis, or the classification data may include the zip code or other location identifying aspect of the destination address information if sorting is to be accomplished on a location basis.

Once the operator has indicated the storage method, using operating panel 13, the contents of the transaction control information data stored in region 33 for each order form are re-arranged separately according to the classification data upon which the sorting is to be accomplished. For example, if commodity sorting is to be accomplished, the transaction control information stored in region 33 is re-organized according to commodity codes. To accomplish this re-organization, control section 17 reads the data stored in Not Processed Data Storing Region 33 for every customer, and transfers that data to Data Determining Section 16 (Figure 2). Section 16 is programmed to perform a recognition function as is well-known to those skilled in the art for determining the receipt of a particular form of operator selected classification data from the received data previously stored in the Not Processed Data Storing Region 33 of memory section 15. Once the commodity codes have been read, the contents of each order form 31 are grouped separately according to these commodity codes and then

stored in the re-ordered form in Processed-Data Storing
Region 34 of memory section 15.

Figure 5 shows the re-arranged contents of order from
31 as the image of a new order form 35. Instead of
actual conversion of the order of data, a method may be
employed in which a conversion table is utilized, as
would be readily apparent to those skilled in the art.
Moreover, the commodity codes may be readily
ascertained if bar codes are entered in the gift
purchasing order form 31.

After the image of order form 31 has been converted or
an appropriate conversion table has been formed by data
determining section 16, the resultant data stored i
Processed Data Storing Region 15 is edited in
accordance with the format data stored in Form Storing
Region 29. For example, with respect to a commodity
code whose code number is the smallest, co-ordinates
are specified through use of the stored format data so
that specific data in the Process Data Storing Region
34 such as destingation (name and address), gift name,
unit price and code, together with the name of address
of the customer are read out sequentially, and are
superimposed under the operation of control section 17
on the appropriate locations on the set of transaction
control slips forms whose format data is stored in Form
Storing Region 29. The image is thus superimposed by
the combination of format data in Form Storing Region
29 and processed data in Processed Data Storing Region
34. Such superimposed data may be temporarily stored in
memory section 15 or may be immediately directed to
digital printer 21.

Figure 6 discloses a set of transaction control slips
39 which is formed by using the transaction control
information from first line 37-1 and line 38 of order
form image 35 (Figure 5) which was derived from the
transaction control information of order form 31
(Figure 4). The data electronically transferred onto
control slips 24-27 from gift purchasing order form 31
are somewhat different from one another. However, such
transfer can be readily realized by specifying the
ranges of co-ordinates of the location of specific
information for each of forms 24-27.

Digital printer 21 preferably comprises a laser
oscillator, an optical scanning system, and a
photosensitive member for printing data in accordance
with the principles of zerography. The image which
comprises a set of transaction control slips 39 is
supplied as a serial bit signal to digital printer 21
which is similar to the signal which is obtained by
optically scanning an original blank form of the set of
transaction control slips which make up set 39, with
transaction control data suitably superimposed. In
digital printer 21, a laser beam is modulated with this
input signal to scan a photosensitive member, so that a
latent image is formed thereon. This latent image is
utilized to form a set of transaction control slips o
which the toner image has been fixed. This final set is
a hard cpy of the image 39 shown in Figure 6, which, in
fact, is a series of four control slips to make up a
complete set.

The resultant document upon which the image 39 is
printed is preferably cut into four slips by a cutter
located within digital printer 21. These four slips
24-27 are combined together with a stapler for each
gift and are discharged into the discharging tray of

printer 21. In other words, a first set of transaction
control slips 24-27 in which transaction control data
from first line 37-1 of order form image 35 has been
entered are discharged. Subsequently, a second set of
transaction control slips 24-27 with information
relating to second line 37-2 of order form image 35 are
then discharged, and so forth. Accordingly, in each set
of transaction control slips issued there are four
individual control slips 24-27.

The sets of transaction control slips are issued in
accordance with the type of commodities to which each
set pertains. Therefore, the sets of transaction
control slips for a first type commodity are first
issued, after which the sets of transaction control
slips for the next commodity are subsequently printed
out by digital printer 21. Since the individual control
slips are issued in the form of a set stapled together,
the management of such slips can be easily achieved.
When a number of gift purchasing order forms 31 are
inputted to the document issuing apparatus of the
subject invention, the resultant sets of transaction
control slips are outputted while being sorted out
separately according to commodites, thereby permitting
storage, control and delivery of the commodities to be
readily carried out in a remarkably more efficient
manner that was heretofore done in the prior art.

The operator can specify other slip sorting methods
instead of the above-described method of sorting out
sets of transaction control slips according to
commodities. For example, when a method of sorting out
sets of transaction control slips according to delivery
zones is required, the classification data of the
stored transaction control data for each order form 31
which relates to recipient's location or delivery zone

is used to arrange the contents of the gift purchasing
order forms 31 according to these delivery zones. The
resultant sets of transaction control slips are issued
sequentially in accordance with the applicable delivery
zones.

The delivery zones can be discriminated one from the
other by referring to the address or postal codes in
the "destination" columns of order form 31, or by
referring to symbols or codes representing delivery
zones which are entered into suitable code columns in
advance.

In the case where a large number of commodities are
being handled, the order in which sets of transaction
control slips are issued may be specified both with
commodity codes and delivery zones. In other words,
sets of transaction control slips for particular
commodities in particularly delivery zones are first
issued whereafter sets of transaction control slips for
different commodities in that same zone or for the same
commodities in different zones are subsequently issued.

In the case where sets of transaction control slips are
issued according to commodities, the slip issuing
method may be so modified such that sets of slips are
prepared not only in the order of increasing commodity
code numbers, but also in the order of decreasing
handling quantities or in the order specified.

Figure 7 shows a block diagram arrangement of a second
example of the document issuing apparatus of the
subject invention. In Figure 7, those components which
have previously been described with reference to Figure
2 are designated by the same reference numerals. In the
case of these particular components, the preceding

description is equally applicable to the arrangement shown in Figure 7.

The apparatus of Figure 7 includes a control section 41 which is connected to operating panel 13, reading section 14, memory section 15, and digital printer 21. Control section 41 operates mcuh as control section 17 operates in the arrangement of Figure 2. However, in Figure 7 there is further disclosed a sorter 42 and a print indicating section 43 with a buzzer 46 which provides means for indicating the completion of outputting sets of transaction control slips for a particular type of classification data and for otherwise indicating printing conditions.

Sorter 42 has a plurality of bins 42a-c. Sorter 42 distributes the sets of transaction control slips into bins 42a-c according to sorting data under the control of control section 41. For instance, in the case where sets of transaction control slips are outputted separately according to delivery zones, a particular bin 42a-c may be used to receive sets of control slips for a particular delivery zone. Thus, even when the sets of transaction control slips are being outputted sequentially in the order of increasing commodity code numbers, the management of such sets of slips is very simple.

Print indication section 43 operates to indicate, for instance, the total number of sets of transaction control slips printed out and the ratio of sets of slips printed to the number to be printed in total. A buzzer 46 may be operated for a predetermined period after the output to each bin 42a-c has been completed, so tht the sets of slips are taken out of such bins by the operator.

Sorter 42 may be disconnected from the document issuing
apparatus. That is, the choice of using sorter 42 may
be given to the operator by using an instruction from
operating panel 13. Other methods of accomplishing the
function of sorter 42 may include the utilization of
buzzer 46 in print indicating section 43 to indicate
when the sets of control slips for a particular
delivery zone have been outputted.

If so requested by the operator through setting of
operating panel 13, control section 41 may detect when
sets of control slips for a particular delivery zone
have been outputted, so that the printing operation of
digital printer may be stopped while buzzer 46 in print
indicating section 43 is continuously operated. When
the operator has removed the slips out of the
discharging tray, outputting sets of slips for the next
delivery zone is commenced. Thus, the slips can be
sorted out separately according to classification data
without utilization of sorter 42.

In a still different method, control section 41 causes
digital printer 21 to output a classifying sheet from
classifying sheet holder 44 whenever the sets of slips
for a particular classification have been completely
outputted. For instance, when all the sets of slips for
one delivery zone have been outputted, one red sheet
may be discharged for classifying sheet holder 44 into
the discharging tray and then the sets of transaction
control sheets to the next delivery zone are outputted.
thus, the operator can sort out the sets of transaction
control slips through utilization of the red classifying
sheets.

It is not always necessary that the classifying sheets
are different in colour from slips. That is,

classifying sheets may be different from the sheets
upon which the sets of transaction control slips are
printed in size or material.

It should be apparent from the above description that
the apparatus according to the subject invention issues
a variety of control slips in sets of transaction
control slips while sorting these sets out according to
classification data contained therein. Accordingly,
these operations can be achieved quickly and accurately.

Furthermore, since format data indicating the form of
each control slip of each set of transaction control
slips is stored as images, telephone lines or the like
can be utilized to issue the slips simultaneously at a
number of points over the country. The electronic data
can be utilized for processing statistical data or slip
data. In addition, since the apparatus of the subject
invention issues slips electronically by combining
format data with content data, it is unnecessary to use
paper on which the forms have been preprinted.
Accordingly, the method of inserting paper into the
printer is much simpler.

While salient features of the invention have been
described with reference to the drawings, it should be
understood that the preferred embodiment described
herein is susceptible to modifications and alterations
without departing from the spirit and scope of the
following claims.

CLAIMS:

1.   A document issuing apparatus for printing
transaction control information, presented on an order
form for each of a plurality of transactions, onto
individual sets of transaction control slips, said
apparatus comprising:
(a)   optical means for reading from the order forms
transaction control data representing transaction
control information for a plurality of transactions,
said transaction control data including classification
data;
(b)   storage means for storing said transaction
control data and for also storing format data
representing the format of said control slips making up
a set of transaction control slips;
(c)   processing means for ordering said control data
for said plurality of transactions in response to said
classification data contained in said transaction
control information for each transaction, and for
organizing said transaction control data for each
transaction into a format compatible with the format of
said control slips; and
(d)   printing means for simultaneously printing both
said transaction control information data and said
format data to form a set of said transaction control
slips for each transaction, said set of transaction
control slips being printed in an order determined by
said classification data for each transaction.

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2.   An apparatus as recited in claim 1 further
including a classifying sheet holder for containing
sheets which are adapted to distinguish said sets of
transaction control slips bearing one form of
classification data from sets of transaction control
slips bearing another form of classification data; and
wherein said printing means includes means for
supplying one of said sheets from said classifying
sheet holder whenever printing of sets of transaction
control slips bearing a certain classification data has
been completed to distinguish said sets from subsequent
sets of transaction control slips.

3.   An apparatus as recited in claim 1 further
including a plurality of bins and including a sorter
for distributing said sets of transaction control slips
into said bins in accordance with said classification
data.

4.   An apparatus recited in claim 1 wherein said
apparatus further includes print indicating means for
indicating when said printing means has completed
outputting a group of sets of transaction control slips
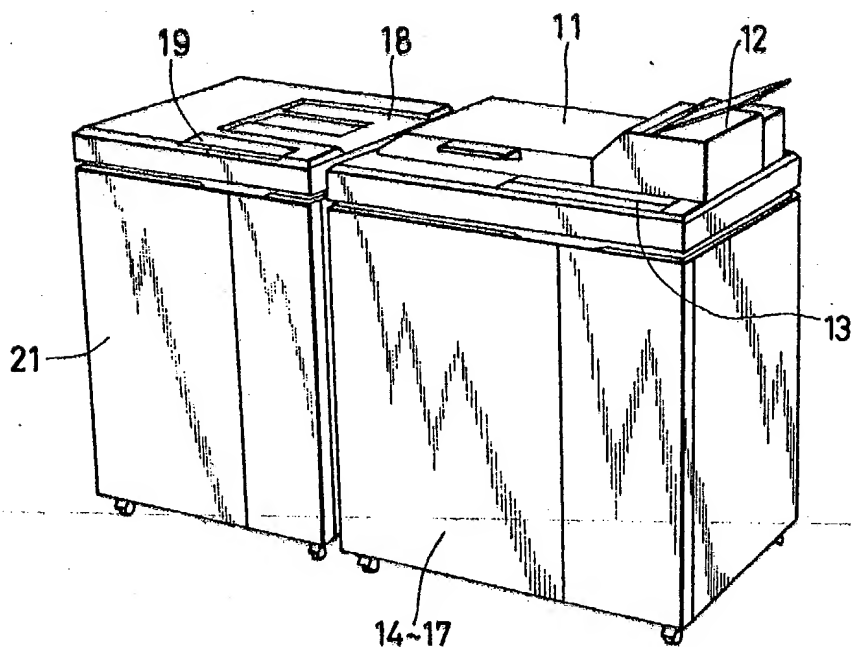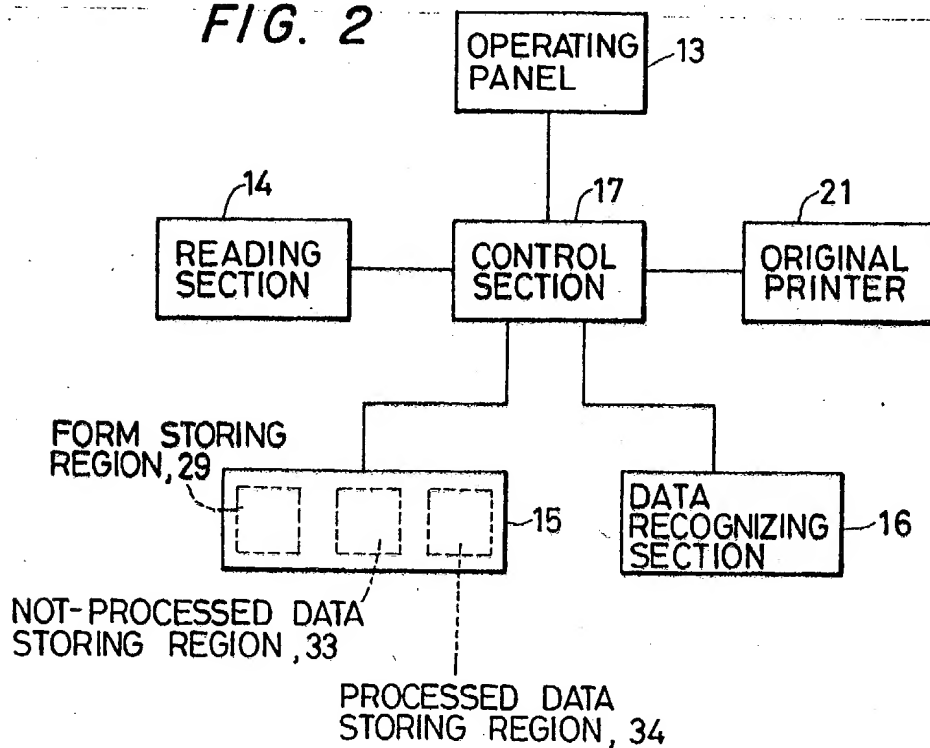in accordance with a certain form of classification
data.

FIG. 1

FIG. 2

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FIG. 3

23

24
TO
FROM
STORE NAME

25
TO
FROM
STORE NAME

26
TO
FROM
STORE NAME

27
TO
FROM
STORE NAME

FIG. 4

31

ORDER FORM

	DESTINATION	GIFT'S NAME	GIFT'S PRICE	GIFT'S CODE
1	NAME ① AND ADDRESS	100		100
2	NAME ② AND ADDRESS	200		200
3	NAME ③ AND ADDRESS	300		300
4	NAME ④ AND ADDRESS	100		100
5	NAME ⑤ AND ADDRESS	300		300
6	NAME ⑥ AND ADDRESS	100		100
7	NAME ⑦ AND ADDRESS	300		300
8	NAME ⑧ AND ADDRESS	200		200
9	NAME ⑨ AND ADDRESS	100		100
10	NAME ⑩ AND ADDRESS	100		100

FROM	NAME OF PURCHASER

STORE
NAME

FIG. 5

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ORDER FORM

DESTINATION	GIFT'S NAME	GIFT'S PRICE	GIFT'S CODE
1 NAME ① AND ADDRESS	100		100
2 NAME ④ AND ADDRESS	100		100
3 NAME ⑥ AND ADDRESS	100		100
4 NAME ⑨ AND ADDRESS	100		100
5 NAME ⑩ AND ADDRESS	100		100
6 NAME ② AND ADDRESS	300		200
7 NAME ⑧ AND ADDRESS	300		200
8 NAME ③ AND ADDRESS	300		300
9 NAME ⑤ AND ADDRESS	200		300
10 NAME ⑦ AND ADDRESS	200		300

37-1
37-2
37-3

FROM	NAME OF PURCHASER

STORE NAME

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FIG. 6

FIG. 7